

May 30, 1953

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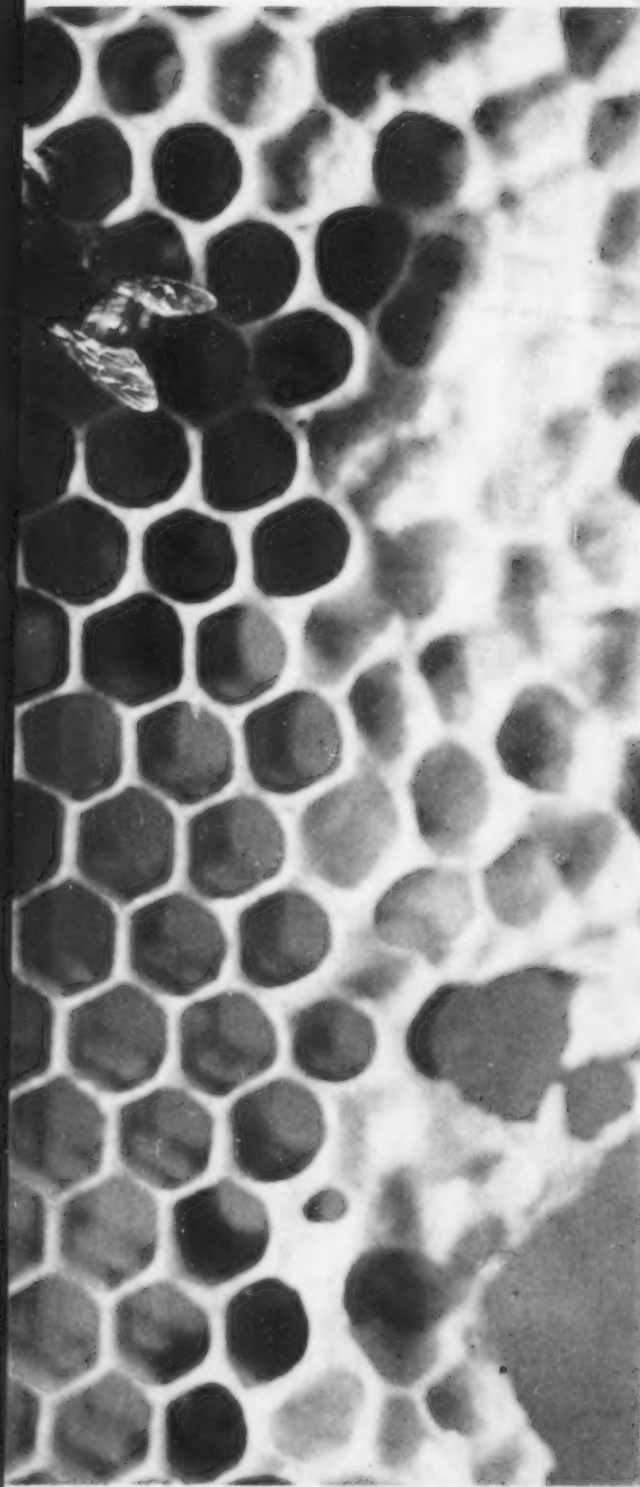
JUN 8 - 1953

DETROIT MI

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Prefabricated Housing



Prefabricated Housing

See Page 338

A SCIENCE SERVICE PUBLICATION

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The plastic comb was developed by Holland R. Sperry, science instructor at Cranbrook School, Bloomfield Hills, Mich.

The bees shown on the front cover of this week's Science News Letter are preparing the plastic cells for honey storage. At the bottom of the picture

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GENERAL SCIENCE

Adequate Manpower Use

► A "DETERMINED cooperative effort" to provide the nation with adequate resources of scientific and professional manpower to meet defense needs was urged on President Eisenhower.

The 14 recommendations to this end were given to the President by Columbia University's National Manpower Council, set up by Mr. Eisenhower when he was head of Columbia. James D. Zellerbach, president of Crown Zellerbach Corp., San Francisco, is chairman of the group.

The recommendations conformed closely to government policy on scientific and technical manpower as already established by the Office of Defense Mobilization on Sept. 6, 1952, and by previous executive orders and laws.

One of the 14 is new.

In the one new recommendation, the Council asks that the military departments should be more flexible in calling ROTC students into active service after graduation. Well qualified ROTC students should be permitted to go into graduate work before they begin military duty, the commission feels.

The recommendations include the college draft deferment program, better use of scientific and technical personnel by industry and government, expanded opportunities for college education, collection of reliable knowledge about human resources, investigation into the basic research needs of the nation as affected by military research, and better control over the recall of

Emperor Penguin Reptilian

► THE DAPPER Emperor penguin is something of a reptile beneath his fine feathers.

Scientists often consider all birds as a sort of "modified reptile," specialized offshoots from that class of animals in the course of evolution. On the basis of a new discovery, however, the Emperor penguin may be considered a more primitive bird, closer to his scaly ancestry, than his less elegant cousin, the chick.

A series of 16 Emperor penguin embryos, recently collected in the Falkland Islands, indicate that early stages of penguin development resemble reptilian embryos of similar age more than chick embryos do.

A generally accepted "law" in biology states that development of an individual follows in a "short-hand" form the evolutionary history of the species. (Humans, for instance, have gill slits

at one stage in embryonic development.)

Thus, bird embryos would be expected to resemble those of reptiles in many respects. Scientists argue that the closer the resemblance, probably the closer the relation.

This discovery on penguin embryos was reported by Dr. T. W. Glenister of the Charing Cross Hospital Medical School, London.

Emperor penguins, like all penguins, are restricted to the Southern Hemisphere. They grow to three feet tall and can weigh more than 50 pounds.

Emperor penguins incubate their one egg by holding it in a fold of skin between the abdomen and instep. When one mate is tired of incubating, the egg is passed to the other with a quick movement of the ankle so it is not exposed to the cold.

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ZOOLOGY

Bees Fill Plastic Combs

See Front Cover

► FOR BEES, the latest prefabricated housing is an artificial comb made of specially treated plastic. It is believed to be the first non-wax comb that bees have filled with honey.

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The bees shown on the front cover of this week's *Science News Letter* are preparing the plastic cells for honey storage. At the bottom of the picture

is a section of natural wax comb added by the bees after the plastic cells had been filled. The wax cells have been partially destroyed by bee-wax moths, hive pests that commonly feed on natural combs but not on the plastic ones.

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reservists.

The Council recommendations should give a boost to a bill introduced by Sen. Ralph Flanders, (R-Vt.), which calls for a civilian board to decide whether particular reservists should be recalled to active duty if exemption is requested by their employers. The Defense Department already has machinery for reviewing such cases.

The Council also called for strengthening scientific courses in the nation's high schools, for giving high school students knowledge about careers in science and engineering and for more state, local and private support for students who cannot afford a college education. Such support was also asked for schools, colleges and universities.

The President was asked to establish a commission to determine how seriously the two-billion-dollar government research and development program may be diverting colleges and universities from their primary jobs of teaching and basic research. One of the duties of the National Science Foundation, as defined by law, is to assess governmental and private research to see that there is a correct balance between basic and applied research in the various subjects.

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GENERAL SCIENCE

Size of Armed Forces Follows Draft Potential

► THE RECENT order cutting the size of the Armed Forces should reach on June 30, 1954, by 291,000 shows an appreciation of the mathematical facts of life.

Defense Secretary Charles E. Wilson essentially had to decide whether he was going to ask Congress to raise the draft period above two years or whether he was going to cut down on the size of the Armed Forces. There just are not enough young men turning 18 and a half each year to keep up a force of 3,647,000 with a draft period of only two years.

From June, 1950, until now the Armed Forces have been coasting along on a manpower pool made up of the draftable young men between 19 and 26 years of age. This pool has been virtually exhausted. Stopgap measures, such as drafting fathers or canceling deferment for young farmers, essential workers and students, might have dumped enough men into the pool to keep it going for another year. But after that, the pool would have been dry again.

The Pentagon is faced with the fact that only between 1,050,000 and 1,200,000 men turn 18 and a half each year. Of those, only 700,000 to 800,000 are draftable. Multiply the top figure by two, for the two-year draft and there is a top supply of 1,600,000. Add to this the generally accepted total of 1,500,000 "professionals" in the Armed Forces and there is a total available of only 3,100,000. This still falls about 250,000 short of Mr. Wilson's goal of 3,356,000, but it is a more workable deficit.

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MEDICINE

Forecast Medical Uses For Silicone Chemicals

► POTENTIAL MEDICAL uses, both on the skin surface and under the skin, for silicones were forecast at the meeting of the American Association of Plastic Surgeons at Edgewater Park, Mississippi.

Silicones, used in one form as bouncing putty for children, are chemical compounds of organic and inorganic substances, with properties unlike any other known material. They can be liquid or solid, are resistant to any temperature extremes and have non-sticking properties. Because of their inertness, they can be widely used to

protect it from irritations such as diaper rash; providing a protective covering for burns, and preventing sogging of skin surrounding wet dressings. Dr. Brown pointed out that these chemicals can be taken to frigid or tropical climates with no change in their consistency from weather conditions.

If experimental studies prove that silicones are perfectly safe for use under the skin, these chemicals may be vastly beneficial in substituting for human cartilage or bone in the restoration of facial and bodily defects.

Cartilage taken from the patient's chest wall is now used when accidents, disease or congenital defects have destroyed ears, noses, chins or other parts of the body. In the future silicones may well substitute for the tedious and difficult process, Dr. Brown said.

Science News Letter, May 30, 1953

Punched card equipment recently classified 3,800 stars by magnitude and location for use in preparing images of the heavens for a new planetarium.

• Books of the Week •

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N. W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

THE CONCEPTION OF DISEASE: Its History, Its Versions and Its Nature—Walther Riese—*Philosophical Library*, 120 p., \$3.75. Analyzes the various conceptions of disease.

ELEMENTS OF ELECTRICITY—William H. Timbie and Alexander Kusko—*Wiley*, 4th ed., 631 p., illus., \$5.50. New illustrations and problems have been added to this standard elementary text to bring it up-to-date.

THE END OF THE WORLD: A Scientific Inquiry—Kenneth Heuer—*Rinehart*, 220 pp., illus., \$3.00. Explores the scientific possibilities among the ways in which the world could end.

THE EPIDEMIOLOGY OF HEALTH—Iago Galdston, Ed.—*Health Education Council*, 197 p., \$4.00. Based on the Eleventh Annual Eastern States Health Education Conference, this offers suggestions on how the objective of health in the mass can be effectively achieved.

THE ADVANCEMENT OF SCIENCE, Vol. IX, No. 36—*British Association for the Advancement of Science*, 106 p., paper, 85 cents. Papers on Oil in Peace and War, Biology of Flying, Road Accidents, Problems of Old Age, etc.

ADVENTURES IN ARTIFICIAL RESPIRATION—Peter V. Karpovich—*Associated Press*, 303 p., illus., \$7.50. Describes in detail 117 known methods of artificial respiration and relates the story of their evolution.

BIRD, AND MAMMALS OF THE SIERRA NEVADA: With Records from Sequoia and Kings Canyon National Parks—Lowell Canby and Joseph S. Dixon—*University of California Press*, 484 p., illus., \$7.50. Outlines the habits of Sierra wildlife and gives information about its continental distribution.

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Spinel was one of the first gems to be synthesized.



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Its Health, Beauty and Growth

By Herman Goodman, M.D.

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New medical uses for silicones include: water-proofing the skin to pro-

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were given the vitamin in addition to a diet that was good or at least fair in protein supply. It did not matter whether the vitamin was given before and after or only after the operation. However, the vitamin did not cause any significant increase in wound healing rate or strength in animals on a low protein diet.

Science News letter, May 30, 1953

PHYSICS

Competitive Atomic Power Foreseen 15 Years Hence

► IT WILL be 15 years or more before atomic power is available commercially on a competitive basis with present

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Science News letter, May 30, 1953

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possible in gas turbines, providing that the materials do not have to come in contact with oxygen.

In order to use very high temperatures, Dr. Daniels said, it will probably be necessary to eliminate the metallic enclosures of the atomic fuel which are now used to prevent radioactive materials from leaving the atomic furnace.

Contamination of the turbine must be accepted, and repairs would have to be made by remote control. The amount of contamination can be determined best by operating small pilot plants.

Science News letter, May 30, 1953

Do You Know?

The thick, ungainly tail of the Gila monster acts as a food reservoir storing up nourishment for the *reptile* to be used during times when forage is scarce.

In comparable latitudes, the Pacific Ocean is generally rougher than the Atlantic because of the greater expanses of open water which let bigger waves build up under the same wind forces.

Polyamide resins are the work-horses of the packaging industry: when spread on paper, metal foil or plastic film, they turn away water vapor; when heated, they become adhesives; they withstand greases, oils and other chemicals, and they form bright coatings.

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MEDICINE

Wound Healing Vitamin**Advised Before Operations**

➤ PATIENTS HAVING operations in the future and wounded soldiers perhaps will be given doses of vitamin B-12, even if they do not have the pernicious anemia for which this vitamin is a remedy.

The reason is that the vitamin speeds wound healing, especially in the early stages. This is the case for laboratory rats, at least, Dr. Charles W. Findlay Jr., of the College of Physicians and Surgeons, Columbia University, and the Presbyterian Hospital, New York, has discovered. His report appears in the *Proceedings of the Society for Experimental Medicine and Biology* (March).

Vitamin B-12, besides its role in pernicious anemia, has been found an important growth factor in young animals, and several researchers believe it plays a part in synthesis in the body of protein. Since body proteins are important in wound healing, Dr. Findlay decided to investigate the effect of the vitamin on wound healing.

The tensile strength of wounds in these animals was increased by at least the third day, and was most noticeably increased by the sixth day when they were given the vitamin in addition to a diet that was good or at least fair in protein supply. It did not matter whether the vitamin was given before and after or only after the operation. However, the vitamin did not cause any significant increase in wound healing rate or strength in animals on a low protein diet.

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PHYSICS

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➤ IT WILL be 15 years or more before atomic power is available commercially on a competitive basis with present

electric power, Dr. Harry A. Winnie, vice-president of General Electric Company, predicted at the dedication of the University of Rhode Island's new Pastore Chemical Laboratory.

Large atomic-electric power stations could be built within five years, he said, if someone wants to pay for them, but the cost would be "terrific." The atomic bomb and the nuclear-powered submarine are "gadgets" built quickly by a "crash" program with unlimited funds because of very special circumstances—the stupidity of the human race, or parts of the human race, which brings about one war after another.

To keep atomic-electric power out of the "gadget" class, the industry must develop on a sound basis, Dr. Winnie said. That will be when it can compete with conventional electric power without requiring a government-supported weapons program for the plutonium produced as a by-product.

Dr. Winnie, who received an honorary degree, urged that atomic power development be carried out with due regard not only for the conservation of money but of "that much rarer commodity, scientific and engineering manpower." Relaxation of present stringent restrictions of the atomic energy act, without jeopardizing national security, would greatly stimulate industry's interest in the whole atomic energy project, he said.

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CHEMISTRY

Urge Gas Turbine**For Sub Atomic Engine**

➤ A GAS TURBINE might solve the problem of getting power from the atom to propel submarines, Dr. Farrington Daniels, chairman of the chemistry department at the University of Wisconsin, stated in Madison, Wis.

"Although progress is being made, particularly in the development of an atomic engine for a submarine," he said, "I believe that a bolder approach should be followed also, and that another line of attack should be made, emphasizing a gas turbine."

Although gas turbines are efficient only at very high temperatures, the atomic furnace is peculiarly suited to high temperatures, such temperatures being limited by the properties of available construction materials.

Ordinary gas turbines, operated by burning fuel, have to be resistant to the oxygen used for chemical combustion of the fuel. Dr. Daniels suggested that an inert gas, such as nitrogen or helium, could be circulated through an atomic furnace and gas turbines using a closed cycle.

It may be possible, he predicted, to go to higher temperatures than are now possible in gas turbines, providing that the materials do not have to come in contact with oxygen.

In order to use very high temperatures, Dr. Daniels said, it will probably be necessary to eliminate the metallic enclosures of the atomic fuel which are now used to prevent radioactive materials from leaving the atomic furnace.

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